

## Case Report

# Management of iatrogenic displacement of maxillary third molar into pterygomandibular space: case report

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### ABSTRACT

Third molar surgery is the most common minor oral surgical procedure performed in dental clinics. Displacement of maxillary third molar tooth into adjacent spaces such as infratemporal fossa, maxillary sinus has been reported earlier. We present an unusual case of iatrogenic displacement of maxillary third molar into pterygomandibular space. A 24 year old dental undergraduate reported to Department of Oral surgery with complaints of trismus and swelling in the cheek region after unsuccessful attempt at extraction of maxillary right third molar tooth. Computed tomography scan localized the tooth in the pterygomandibular space. A surgical removal of the displaced tooth was performed under general anesthesia. Displaced tooth was approached by an intraoral vertical incision along the anterior border of ramus of mandible. Correlating with computed tomography scan, tooth was located and removed followed by suturing of the surgical site. A good knowledge of the operating area and adjoining spaces is essential to avoid iatrogenic damage to tissues during minor oral surgery procedures. Adequate exposure and appropriate instrumentation during surgery can prevent undue complications and ensure quality patient care.

**Keywords:** Complication, Displacement, Maxilla, Pterygoid muscle, Pterygomandibular space, Third molar

### INTRODUCTION

Wisdom tooth removal is the most common surgical procedure performed by dentists and oral and maxillofacial surgeons in clinical practice. Successful treatment depends on thorough knowledge of surgical anatomy, the various techniques and precise surgical skills. Surgical removal of the third molar tooth is not devoid of complications; some of which include fracture of the tuberosity, tooth root fracture, perforation of the maxillary sinus, prolapse of the buccal fat pad, and displacement of the roots or tooth into the maxillary sinus.<sup>1</sup> One of the major complications of maxillary third molar removal is the accidental displacement of the tooth into adjacent anatomical spaces such as maxillary sinus,

infratemporal fossa, pterygopalatine fossa, lateral pharyngeal space and buccal space.<sup>1,2</sup> Risk of this complication is increased due to poor visibility of maxillary third molar, poor accessibility to the region and presence of thin maxillary tuberosity. This case report discusses the dislodgement of maxillary third molar into pterygomandibular space (PtMS) during surgical removal, a complication that has not been reported till date. The main objectives of this case report are to elaborate the mechanism of displacement of maxillary tooth into adjacent facial spaces, discuss theories related to the time of intervention for retrieval of the dislodged tooth and to stress on the fact that tooth displacements can be prevented with appropriate use of instrument and technique.

## CASE REPORT

A 24 year old dental graduate student reported to the Department of Oral surgery with complains of trismus, pain and swelling in the right cheek region since 5 days. She gave a history of unsuccessful upper third molar extraction by a local dentist 5 days ago. The upper right third molar tooth was unavailable after surgery and was presumably lost in the infratemporal space. The dentist attempted a surgical removal of the tooth under local anesthesia but failed to retrieve the tooth. A computed tomographic scan (CT) was done to localize the tooth. The dentist noticed on the CT that the tooth had migrated to the PtMS (Figure 1) and referred the patient to higher center for further management. A surgical removal of the displaced tooth was planned under general anesthesia. Following preanesthetic evaluation and written informed consent, the patient was taken up for surgery under general anesthesia 2 days later. An intraoral vertical incision was given along the anterior border of ramus of mandible. Supraperiosteal dissection was done medial to the ramus of the mandible, above the level of mandibular foramen remaining close to the bone. A hard structure was felt under the instrument right below the sigmoid notch. Correlating with the CT scan, Kocher's forceps was used to hold the displaced tooth and tweeze it out of its attachments. Hemostasis was achieved and surgical site was closed using resorbable sutures. At three months follow up, the patient has recovered well with no signs of trismus, pain or discomfort during normal oral functions.

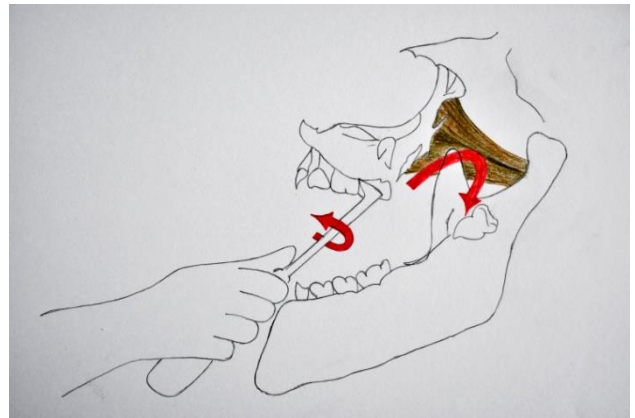


**Figure 1: CT scan image of displaced tooth in PtMS.**

## DISCUSSION

Accidental displacement of maxillary third molars into adjoining spaces is a frequently reported complication. There have been numerous reports of displacement of mandibular third molar tooth or its roots into PtMS but the iatrogenic displacement of maxillary third molar into this space has not been documented. The factors favouring displacement of maxillary third molar into PtMS are thin maxillary tuberosity, inappropriate elevator use and the anatomical relationship of infratemporal and PtMS.

Dentists and oral surgeons commonly prefer use of curved elevators to extract conical/single rooted maxillary third molar tooth; cryer or curved warwick james elevators specifically.



**Figure 2: Schematic diagram to represent the mechanism of maxillary tooth displacement into PtMS during elevator use. The arrow around the elevator shows the desired movement of force application during extraction. The other arrow shows the predicted path of travel of the maxillary tooth from its socket to PtMS.**

After an initial wedging pressure with the elevator, the direction of preferred force application is distobuccal and the direction of expected tooth movement is bucco-occlusal. Inappropriate use of elevator with respect to force and direction may lead to iatrogenic displacement of the third molar into adjoining spaces.

The most common space for displacement of a maxillary third molar is reported to be infratemporal fossa.<sup>3,4</sup> The PtMS lies inferior to infratemporal fossa and is separated from it by the lateral pterygoid muscle, which is a horizontal muscle whose superior head originates from greater wing of sphenoid and inserts into temporomandibular joint and inferior head originates from the outer surface of the lateral pterygoid plate and inserts into the pterygoid fovea. This muscle forms the floor of the infratemporal fossa and the roof of the PtMS and it is interesting to note that the maxillary third molar tooth should travel either between the two heads or the muscle or slide anterior to the muscle to be displaced into the PtMS (Figure 2).

The literature related to iatrogenic tooth displacements do not arrive at a conclusion regarding removal time of displaced tooth, therefore a lot of controversies exist. Some authors propose immediate retrieval of the tooth due to sequential risk of infections and associated damage to the vital structures.<sup>5</sup> whereas some authors believe that displaced teeth can migrate downwards into the oral cavity, allowing an easy surgical removal.<sup>5-7</sup> Nonetheless according to others, migration of the tooth is impossible because of fibrosis and anatomical boundaries.<sup>8</sup> In the case presented here, delay in removal of the displaced

tooth may have resulted in further migration of the tooth into PtMS and close to vital structures complicating tooth removal and therefore surgical removal was done early. Patient complaints of trismus and discomfort were another indication to direct towards early removal of displaced tooth.

## CONCLUSION

To quote Reynolds “To do good, you must see good” which justifies the need of proper visualization before acting, accompanied by radiographic examination, use of correct technique, instruments and application of appropriate amount of force required for accurate extractions. Following these principles could have averted this complication in the first place. Following the same principles has enabled the authors to treat the complication successfully.

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